Client No. H16-25538
SLWK No. 256.049US1
Pamela A. Binns

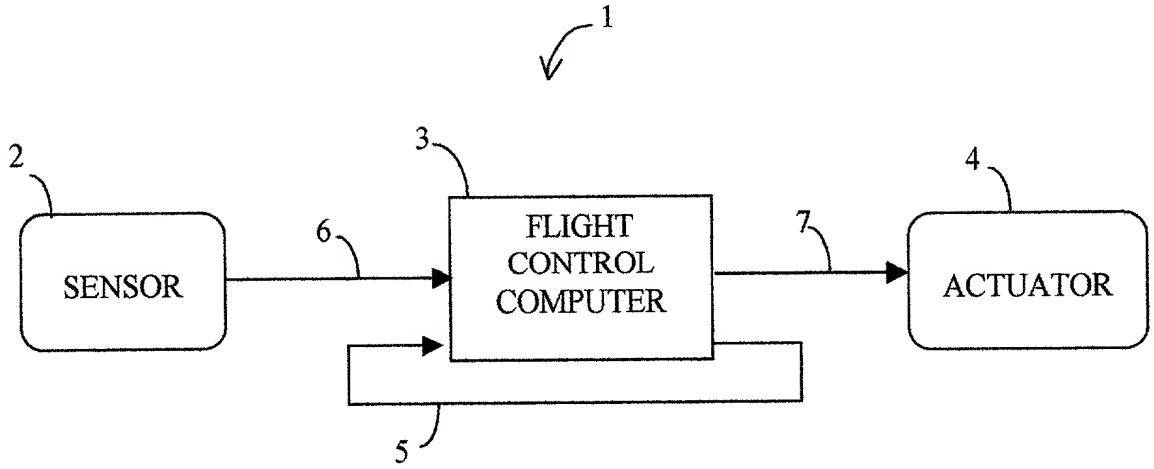


FIG. 1

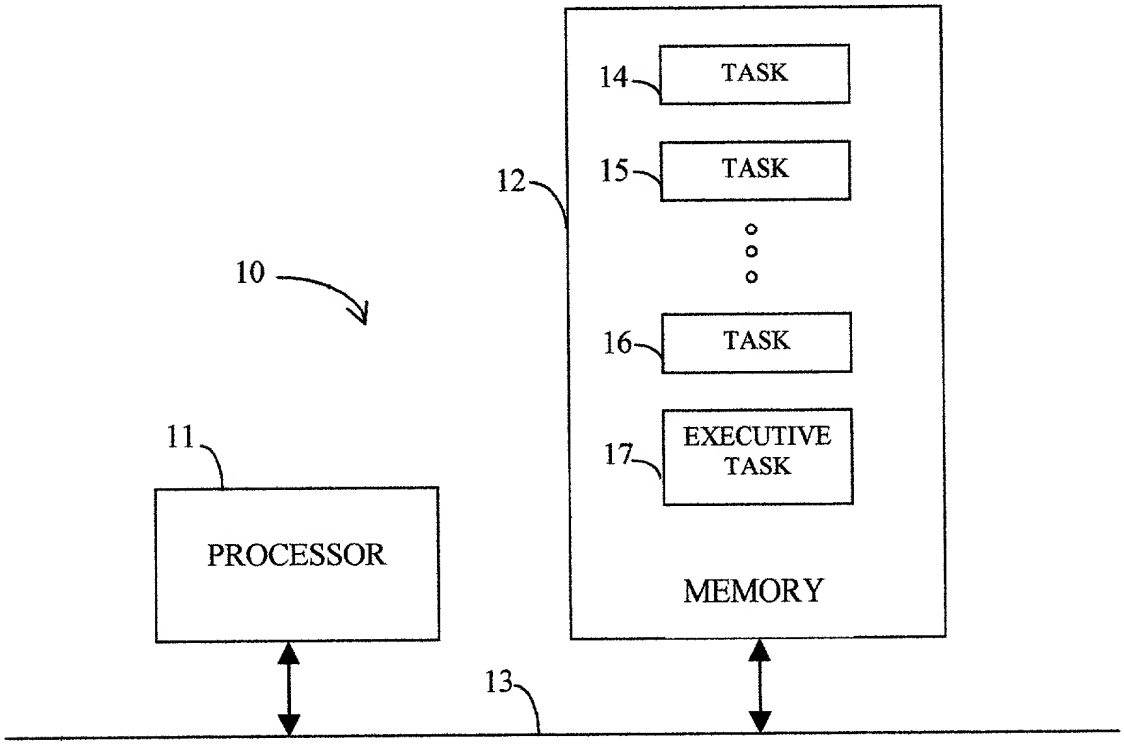


FIG. 2

09535955 - 1090908

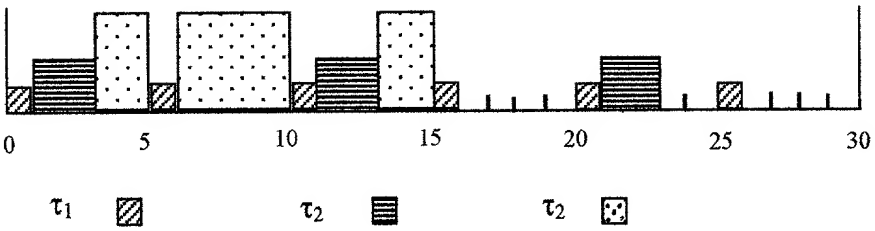


FIG. 3

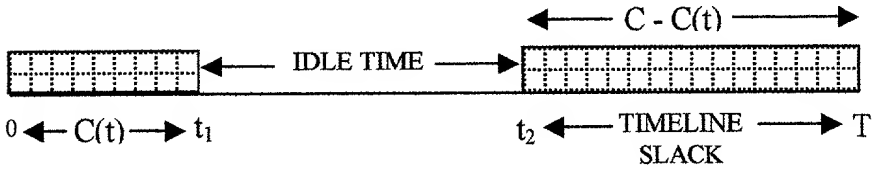


FIG. 4

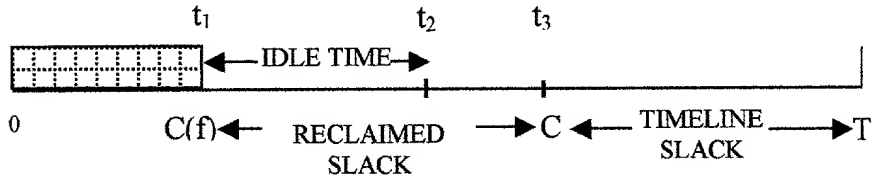


FIG. 5

09525955.1

Client No. H16-25538
SLWK No. 256.049US1
Pamela A. Binns

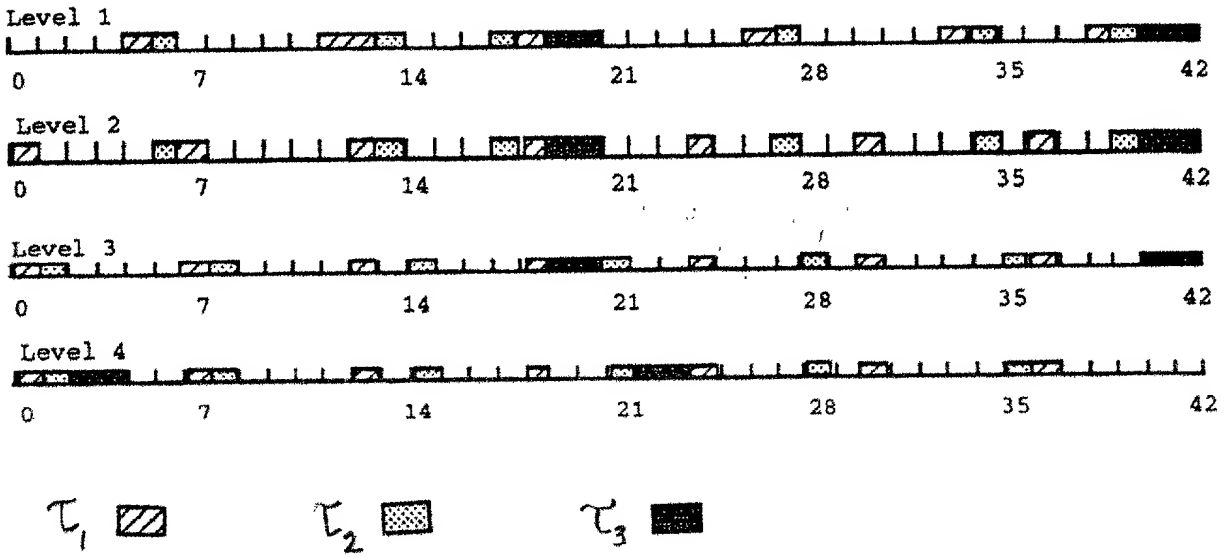
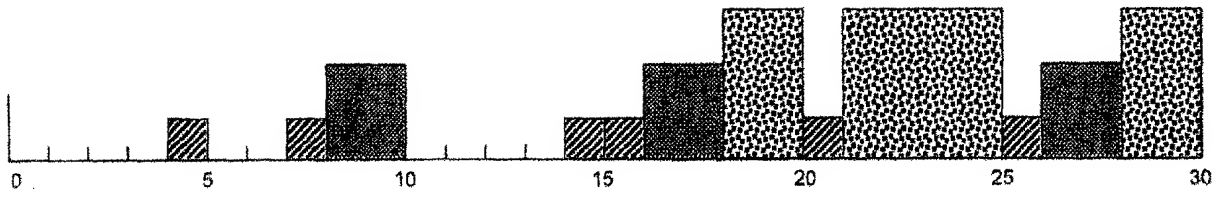


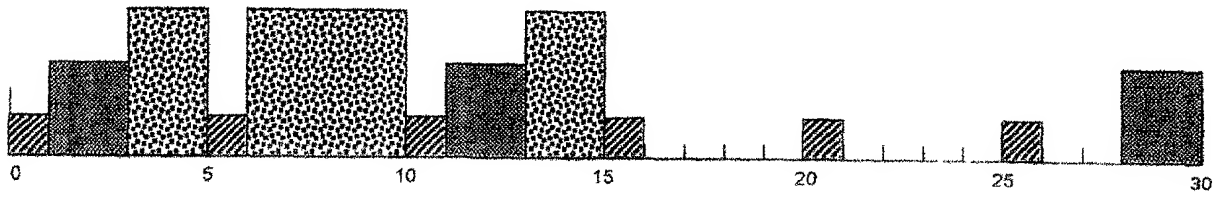
FIG. 6

09954955.1

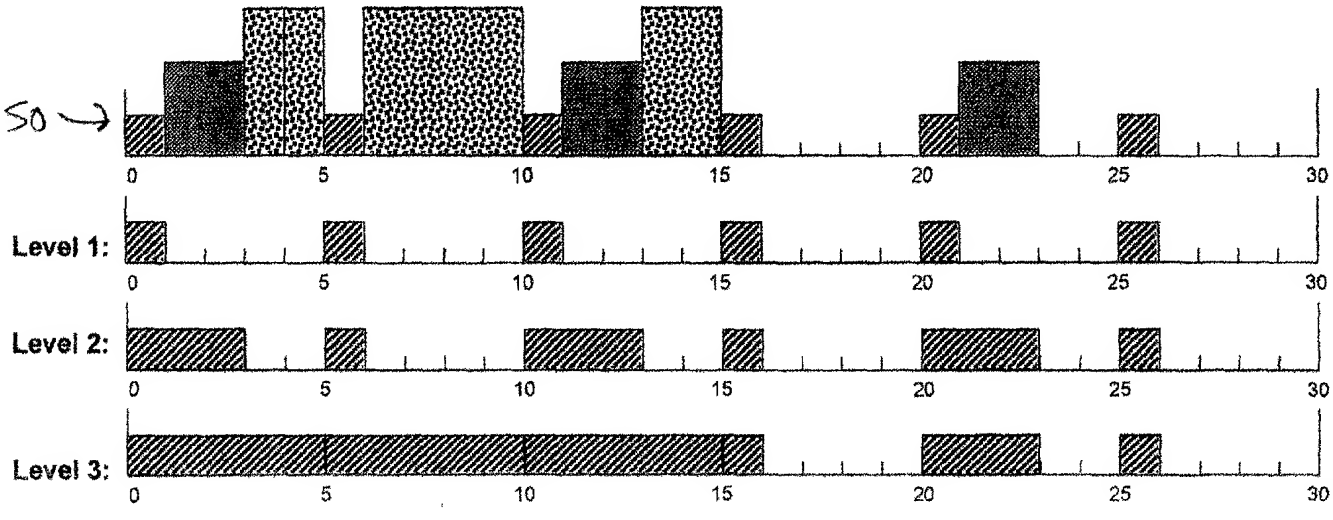
Client No. H16-25538
SLWK No. 256.049US1
Pamela A. Binns



τ_1 τ_2 τ_3 FIG. 7



τ_1 τ_2 τ_3 FIG. 8



τ_1 τ_2 τ_3 FIG. 9

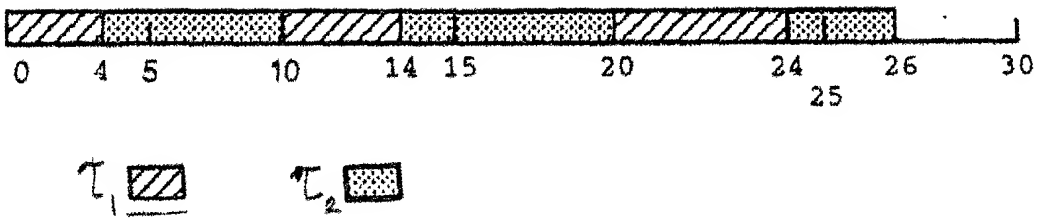


FIG. 10

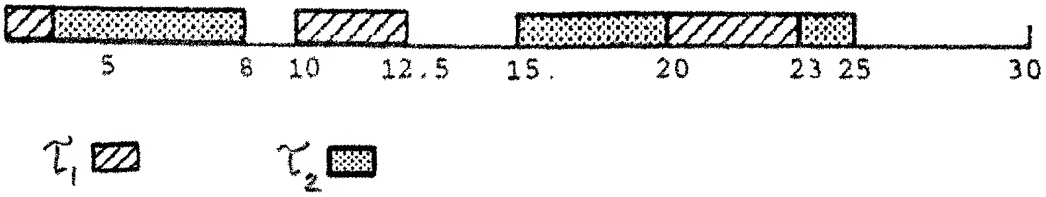
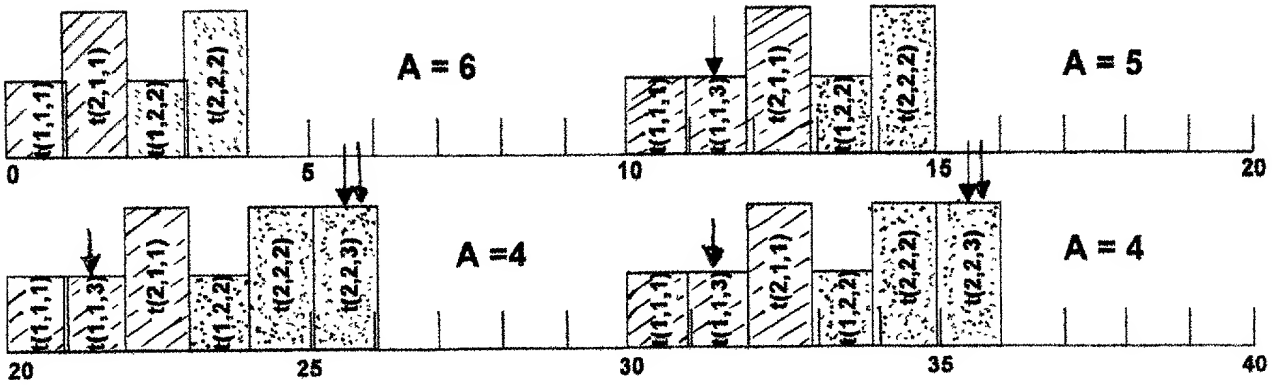


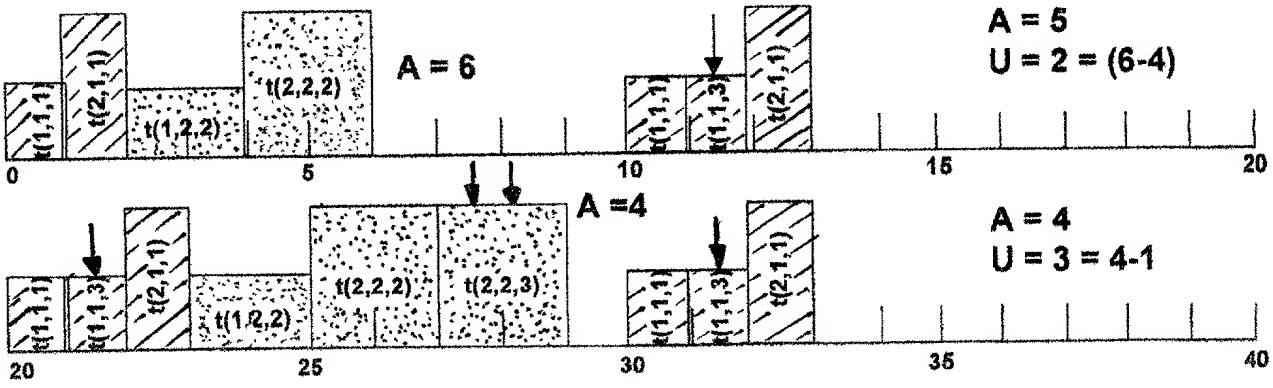
FIG. 11

Express Mail Label No. EV 325 445 305 US

Client No. H16-25538
SLWK No. 256.049US1
Pamela A. Binns



R_1 R_2 FIG. 12



R_1 R_2 FIG. 13

95354956.1

Client No. H16-25538
SLWK No. 256.049US1
Pamela A. Binns

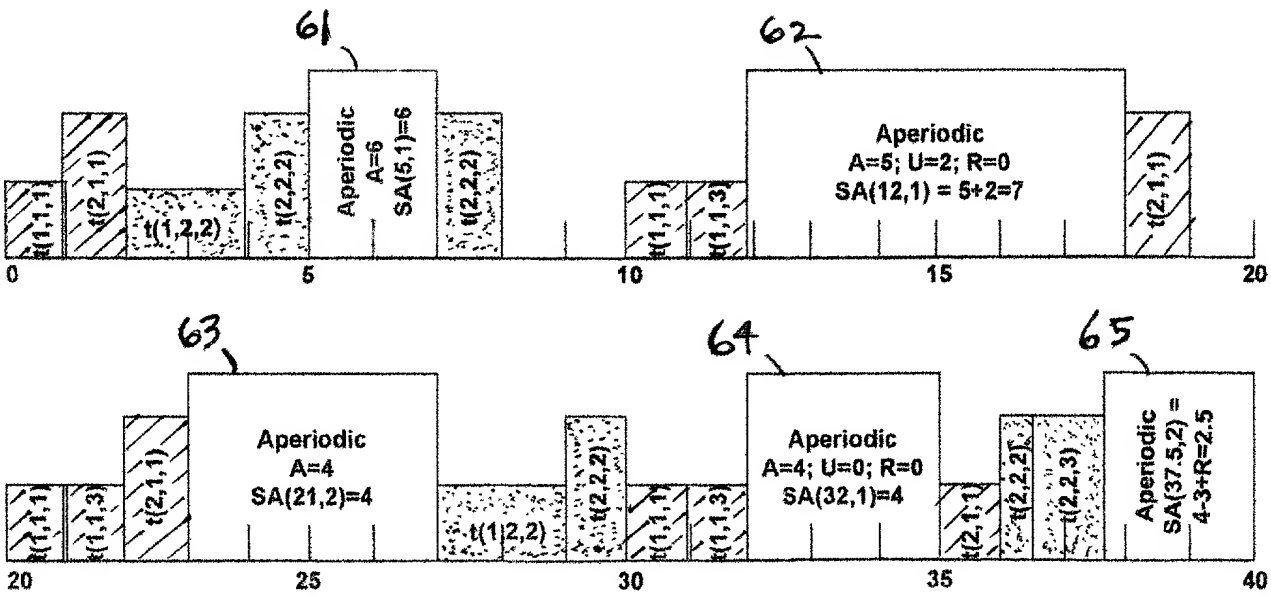


FIG. 14

R_1 R_2 Aperiodic

09955455.1

Client No. H16-25538
SLWK No. 256.049US1
Pamela A. Binns

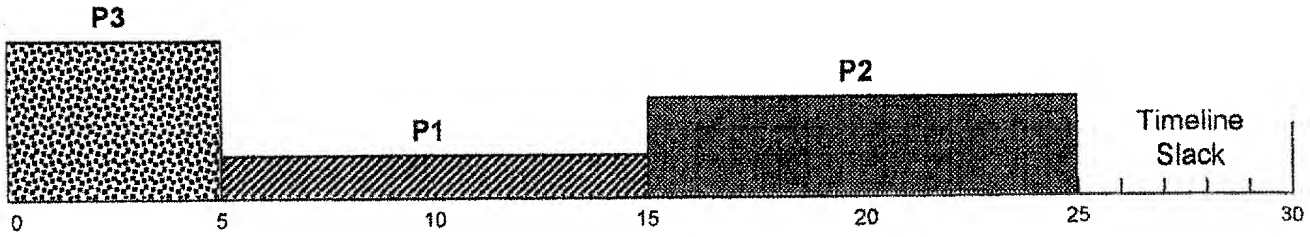


FIG. 15

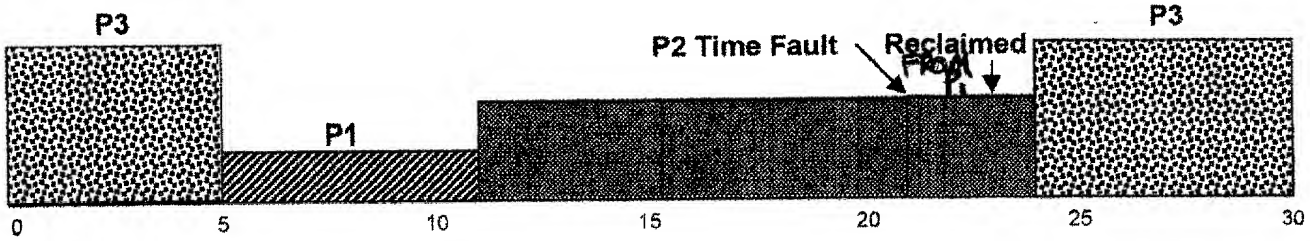


FIG. 16

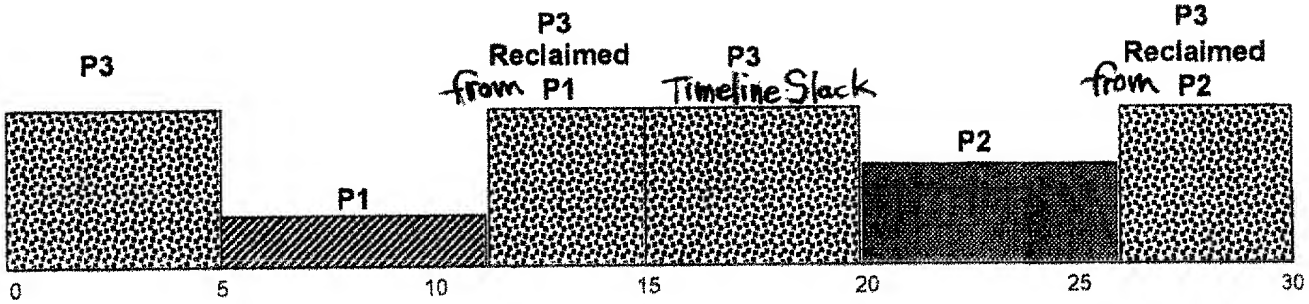


FIG. 17

09356.4200

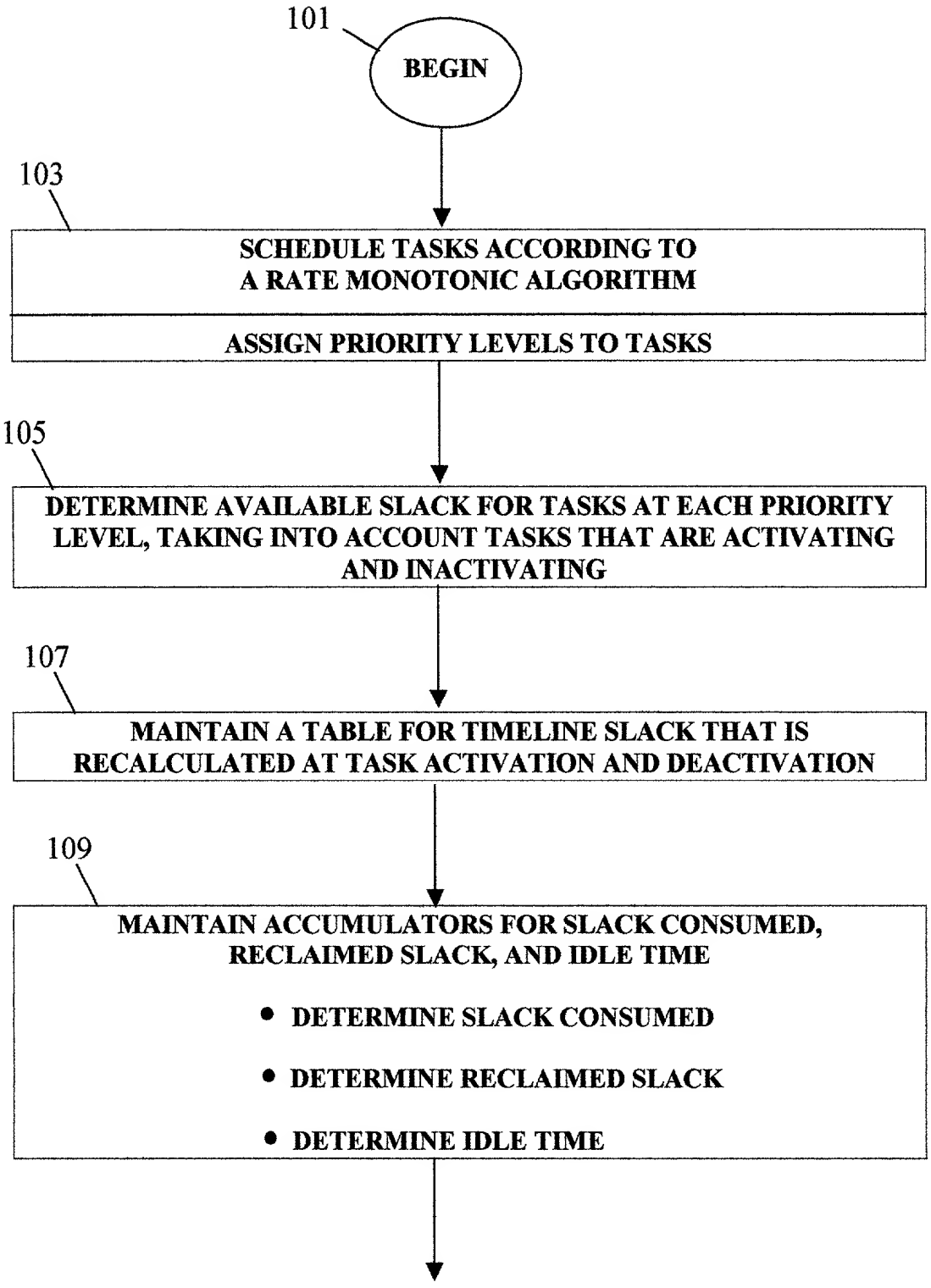

101
BEGIN
103
SCHEDULE TASKS ACCORDING TO A RATE MONOTONIC ALGORITHM
ASSIGN PRIORITY LEVELS TO TASKS
105
DETERMINE AVAILABLE SLACK FOR TASKS AT EACH PRIORITY LEVEL, TAKING INTO ACCOUNT TASKS THAT ARE ACTIVATING AND INACTIVATING
107
MAINTAIN A TABLE FOR TIMELINE SLACK THAT IS RECALCULATED AT TASK ACTIVATION AND DEACTIVATION
109
MAINTAIN ACCUMULATORS FOR SLACK CONSUMED, RECLAIMED SLACK, AND IDLE TIME
• DETERMINE SLACK CONSUMED
• DETERMINE RECLAIMED SLACK
• DETERMINE IDLE TIME

FIG. 18A

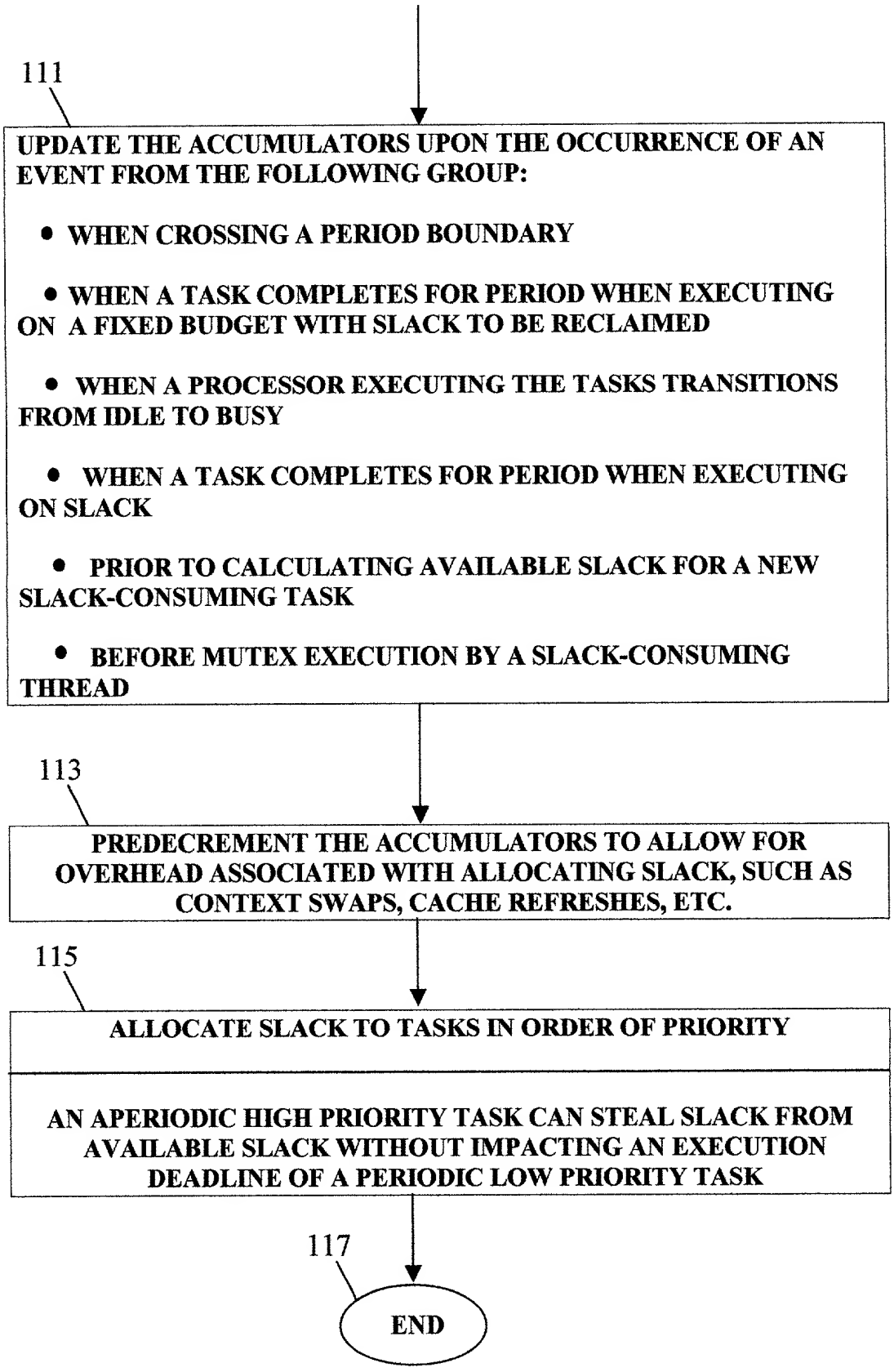

111
UPDATE THE ACCUMULATORS UPON THE OCCURRENCE OF AN EVENT FROM THE FOLLOWING GROUP:
• WHEN CROSSING A PERIOD BOUNDARY
• WHEN A TASK COMPLETES FOR PERIOD WHEN EXECUTING ON A FIXED BUDGET WITH SLACK TO BE RECLAIMED
• WHEN A PROCESSOR EXECUTING THE TASKS TRANSITIONS FROM IDLE TO BUSY
• WHEN A TASK COMPLETES FOR PERIOD WHEN EXECUTING ON SLACK
• PRIOR TO CALCULATING AVAILABLE SLACK FOR A NEW SLACK-CONSUMING TASK
• BEFORE MUTEX EXECUTION BY A SLACK-CONSUMING THREAD
113
PREDECREMENT THE ACCUMULATORS TO ALLOW FOR OVERHEAD ASSOCIATED WITH ALLOCATING SLACK, SUCH AS CONTEXT SWAPS, CACHE REFRESHES, ETC.
115
ALLOCATE SLACK TO TASKS IN ORDER OF PRIORITY
AN APERIODIC HIGH PRIORITY TASK CAN STEAL SLACK FROM AVAILABLE SLACK WITHOUT IMPACTING AN EXECUTION DEADLINE OF A PERIODIC LOW PRIORITY TASK
117
END

FIG. 18B

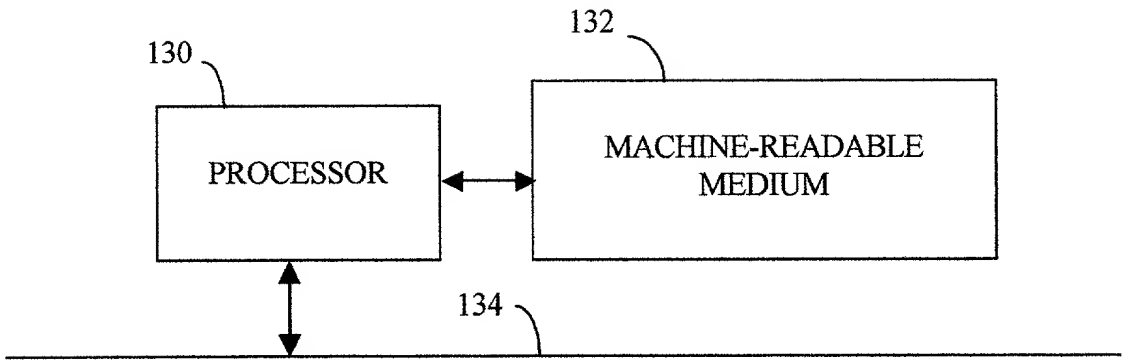


FIG. 19

256.049US1